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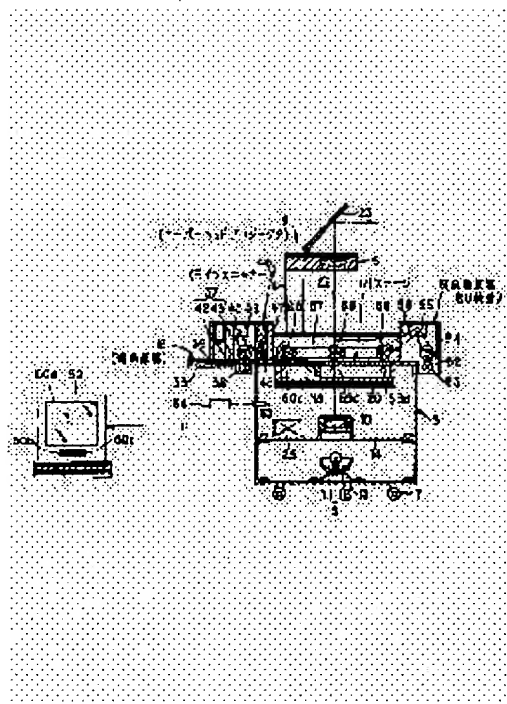
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(54) PROJECTOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an inexpensive projector capable of making use of the images of a light transmission document for something except projection.

SOLUTION: In a transmission type overhead projector 2 integrally incorporated with an automatic document feeder 6, a line scanner 40 for reading the images of the light transmission document 16 under carrying, in each line is arranged between a pair of feeding rollers 38 in the automatic document feeder 6 and a stage 17. The images read by the line scanner 40 are converted into video signals by a control part 25 and outputted to an external equipment such as a computer 50. Further, a direction where the transmission document 16 is placed is detected by the line scanner 40 to be used for the carrying control of the document 16 in the automatic document feeder 6.



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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the projector which projects a transparency manuscript.  
[0002]

[Description of the Prior Art] In case a presentation is performed to a lot of people, the projector which can put up a manuscript greatly is used. This projector illuminates the transparency manuscript laid on the stage by the light source of a lamp etc. through a Fresnel lens, and projects the image of a transparency manuscript on a screen by the projection optical system which consists of a projection lens or a projection mirror. Moreover, the overhead projector of the gestalt by which the projection head in which the projection optical system was included is arranged above the stage, the reflective mold projector of the gestalt with which the projection optical system was incorporated in the body, etc. are in such a projector.

[0003] The automatic manuscript feed gear which makes easy the set of the transparency manuscript to the stage top of a projector, exchange of a transparency manuscript, etc. is known. This automatic manuscript feed gear is used laying on the stage of a projector, and it consists of a conveyance device which discharges from a stage the transparency manuscript which projection ended while it sends out a transparency manuscript on a stage from the medium tray to which a transparency manuscript is set, and this medium tray. Moreover, the various proposals also of the projector into which the automatic manuscript feed gear was built beforehand are made.

[0004]

[Problem(s) to be Solved by the Invention] According to want of displaying on a monitor, or wanting to record the transparency manuscript used by the projector by the videocassette recorder, computer, etc., and to use it separately, many projectors incorporating the image pick-up equipment which consists of CCD etc., a video camera, etc. are proposed. However, when image pick-up equipment was built into a projector, there was a problem that it was difficult for another light source led to image pick-up equipment to be needed, or to enlarge a projector by incorporating image pick-up equipment etc. in respect of cost, a nest tooth space, etc.

[0005] This invention is for solving the above-mentioned trouble, and aims at offering the low cost projector which can use the image of a transparency manuscript in addition to projection.

[0006]

[Means for Solving the Problem] In order to solve the above-mentioned trouble, in case a projector according to claim 1 conveys a transparency manuscript on a stage, it reads the image of a transparency manuscript, and forms the line scanner outputted to an external instrument in an automatic manuscript feed gear.

[0007] Moreover, a projector according to claim 2 detects the size of a transparency manuscript, and controls the amount of conveyances of the transparency manuscript by the automatic manuscript feed gear by the line scanner according to this.

[0008]

[Embodiment of the Invention] As shown in drawing 1, the transparency mold overhead projector 2 which carried out this invention consists of the housing 3 of the shape of a cube type used as a pedestal, a pillar 4 attached to the side face of this housing 3, a projection head 5 prepared in the upper bed of this pillar 4, and an automatic manuscript feed gear 6 attached in the top face of housing 3. It is the thing of the gestalt used for a floor line for this overhead projector 2, laying, and while supporting an overhead projector 2, the wheel 7 used at the time of migration is formed in the underside of housing 3.

[0009] Inside housing 3, the light source 9 and a condensing lens 10 are arranged. The light source 9 consists of a lamp 11 and a reflector 12 which turns up the light emitted from this lamp 11, and is reflected, and is attached in the base of housing 3 with the bracket 13. A condensing lens 10 is held at a bracket 14, is arranged above the light source 9, condenses the light from the light source 9, and is irradiated towards the upper part. In addition, although not illustrated, near the light source 9, the cooling fan which cools the light source 9 is arranged inside housing 3. Moreover, the slit which introduces the open air in housing 3 is prepared in the side face of housing 3.

[0010] The stage 17 in which the transparency manuscript 16 conveyed from the automatic manuscript feed gear 6 is laid is established in the top face of housing 3. This stage 17 consists of a transparent glass plate 18, the light emitted from the light source 9 is made to penetrate, and the transparency manuscript 16 is made to be illuminated. Two Fresnel lenses 19 and 20 are arranged under the glass plate 18.

[0011] The projection lens 22 which condenses the light which illuminated the transparency manuscript 16 on a stage 17, and the projection mirror 23 which reflects the light condensed with this projection lens 22, and is projected on a screen are formed in the projection head 5. The pillar 4 is attached so that it can move to the side face of housing 3 in the vertical direction, and it performs focus accommodation of a projection image by vertical migration of a pillar 4.

[0012] The control section 25 which controls each part of an overhead projector 2 is formed in the upper part of the bracket 14 in housing 3. This control section 25 is equipped with the conversion circuit which changes the read picture signal into a video signal etc., the output section which outputs this video signal to an external instrument while the control circuit which consists of a CPU etc. is incorporated and it controls a transfer control, image read, etc. of the transparency manuscript 16 within the automatic manuscript feed gear 6.

[0013] In order that drawing 2 may show the condition of having seen the overhead projector 2 from the upper part and may open a stage 17 to the projection head 5, opening 27 is formed in a part for the center section of the automatic manuscript feed gear 6. Moreover, the electric power switch 28 which turns on and off the power source of an overhead projector 2, the delivery switch 29 which discharges the transparency manuscript [ finishing / projection ] 16 from a stage 17, and the control panel 31 with which the fine conveyance switch 30 grade which performs positioning of the transparency manuscript 16 on a stage 17 was incorporated are formed in the top face of the automatic manuscript feed gear 6. These switches 28-30 are connected to the control section 25 in housing 3.

[0014] The medium tray 33 to which one transparency manuscript 16 is set at a time is formed in the side face by the side of the end of the automatic manuscript feed gear 6. In case the transparency manuscript 16 is inserted a longitudinal direction or from a short hand, the index 34 which doubles the edge of the transparency manuscript 16 is describing on the top face of this medium tray 33. In addition, this index 34 is doubled with the width of face of the transparency manuscript 16 of A4 size, and the index for the transparency manuscripts of other sizes can be added, or it may enable it to move an index according to the size of a manuscript.

[0015] The manuscript insertion opening 36 with which the transparency manuscript 16 is inserted is formed in the side face of the automatic manuscript feed gear 6 in the upper part of a medium tray 33. the feed roller pair which turns to a stage 17 the manuscript pilot switch 37 which detects that the transparency manuscript 16 was inserted, and the transparency manuscript 16 on a medium tray 33, and feeds with it in the inner part of this manuscript insertion opening 36 -- the motor 39 for feeding which drives 38 and this feed roller pair 38, and the line scanner 40 which scans the image of one line of the transparency manuscript 16 under conveyance at a time, and reads it are incorporated.

[0016] the two forks arranged by the manuscript pilot switch 37 approaching the wall top face of the

automatic manuscript feed gear 6 with the detection piece 42 hung free [ a splash ] along the conveyance direction of the transparency manuscript 16, and this detection piece 42 -- it consists of floodlighting mold photosensor 43 of a configuration. If the transparency manuscript 16 lets a medium tray 33 top slide and is inserted into the automatic manuscript feed gear 6 from the manuscript insertion opening 36 as shown in drawing 3 , the head of the transparency manuscript 16 will press the detection piece 42. The detection piece 42 rocks and interrupts between the floodlighting section of photosensor 42, and light sensing portions by part for the point. Thereby, photosensor 42 is turned on and it is detected that the transparency manuscript 16 was inserted.

[0017] The ON signal of the manuscript pilot switch 37 is inputted into the control section 25 in housing 3. A control section 25 drives the motor 39 for feeding, and the line scanner 40 according to the ON signal of the manuscript pilot switch 37. a revolution of the motor 39 for feeding -- a belt 45 -- a feed roller pair -- it is transmitted to 38. This feed roller pair 38 puts the transparency manuscript 16, rotates, and is conveyed with constant speed towards a stage 17.

[0018] the line scanner 40 -- the transparency manuscript 16 -- a feed roller pair -- the image is scanned while being conveyed by 38. This line scanner 40 is arranged ahead of the line sensor 47 in which the read of the color picture using CCD arranged by intersecting perpendicularly to the conveyance direction of the transparency manuscript 16 is possible, and this line sensor 47, and consists of selfoc lenses 48 which carry out image formation of the image of the transparency manuscript 16 to a line sensor 47. The image of the transparency manuscript 16 is twisted line scanner 40, and photo electric translation is carried out, and it is inputted into a control section 25. A control section 25 changes into a video signal the picture signal inputted from the line scanner 47, for example, outputs it to external instruments, such as a computer 50, and a monitor, a video player, a video printer.

[0019] The image of the transparency manuscript 16 is expressed to monitor 50a as a computer 50 based on the inputted video signal. Moreover, it can record on floppy disk 50c by floppy drive 50b, or an image can also be corrected and processed by computer 50.

[0020] The manuscript exhaust port 52 is formed in the opposite hand of the manuscript insertion opening 36 at the automatic manuscript feed gear 6. the back of this manuscript exhaust port 52 -- a delivery roller pair -- 53 arranges -- having -- \*\*\*\* -- that upper part -- a delivery roller pair -- the motor 55 for conveyance which drives 53 through a belt 54 is arranged. the manuscript pilot switch 37 turns on this motor 55 for conveyance like the motor 39 for feeding -- operating -- a delivery roller pair -- the conveyance rollers 58, 59, and 60 are driven through belts 56 and 57 with 53.

[0021] The conveyance rollers 58-60 are the upper parts of housing 3, and are arranged in the side of a stage 17. The follower rollers 58a, 59a, and 60a which meet, respectively and put the edge of the transparency manuscript 16 under each conveyance rollers 58-60 are arranged, and these follower rollers 58a-60a are attached free [ a revolution ] so that it may project slightly from the top face of housing 3.

[0022] The stepping motor is used and both said motor 39 for feeding and the motor 55 for conveyance are controlled by the control section 25. By the scan of the transparency manuscript 16 with the line scanner 40, a control section 25 detects the die length of the cross direction of the transparency manuscript 16, and specifies the loading direction of the transparency manuscript 16 from the die length of this cross direction. And corresponding to the conveyance lay length of the transparency manuscript 16, the motor 39 for feeding and the motor 55 for conveyance are driven, and the motor 39 for feeding and the motor 55 for conveyance are stopped so that the transparency manuscript 16 may be laid in the center of a stage 17. Moreover, at the time of a halt of this motor 39 for feeding and the motor 55 for conveyance, actuation is suspended also for the line scanner 40.

[0023] As shown in drawing 4 , the transparency manuscript 16 conveyed on the stage 17 is projected on a screen by the light source 9, a condensing lens 10, Fresnel lenses 19 and 20, the projection lens 22, and the projection mirror 23. And the transparency manuscript 16 which projection ended is discharged from the manuscript exhaust port 52 by operating the delivery switch 29 in the control panel 31 of automatic manuscript feed gear 6 top face. If the delivery switch 29 is turned on, this ON signal will be inputted into a control section 25, and a control section 25 will drive the motor 55 for conveyance. Thereby, as shown in drawing 5 , the transparency manuscript 16 is discharged by the conveyance rollers 58-60 and

delivery roller pair 53 from the manuscript exhaust port 52.

[0024] In addition, although count termination of the timer by which a count is started with actuation of the delivery switch 29 within a control section 25 performs a halt of the motor 55 for conveyance at the time of this manuscript blowdown, a sensor may be formed near the manuscript exhaust port 52, and the motor 55 for conveyance may be stopped by this detection result.

[0025] Moreover, the remote control light sensing portion 63 connected to the control section 25 is formed in the side face of housing 3. It can carry out from the location which left actuation by the switch on a control panel 31, and the same actuation with the remote control unit shown with a sign 64.

[0026] Next, an operation of the above-mentioned operation gestalt is explained. An overhead projector 2 is arranged in the location which stands face to face against a screen. In recording the image of the transparency manuscript 16 with projection of the transparency manuscript 16, as shown in drawing 1, it connects a computer 50 to a control section 25.

[0027] If the electric power switch 29 in the control panel 31 of automatic manuscript feed gear 6 top face shown in drawing 2 is operated to an ON side, the lamp 11 of the light source 9 will light up, and the light irradiated from this lamp 11 will carry out incidence to the projection lens 22 through a condensing lens 10, Fresnel lenses 19 and 20, and a glass plate 18. The projection lens 22 condenses this light and it carries out incidence to the projection mirror 23, and the projection mirror 23 reflects this and it projects it on a screen. At this time, vertical migration of the pillar 4 is carried out according to the dotage condition of the profile of the light projected on the screen, and a certain amount of focus accommodation is performed.

[0028] Where the field which the image is describing is turned up, as the transparency manuscript 16 is laid on a medium tray 33 and it is shown in drawing 3, it lets the transparency manuscript 16 slide on a medium tray 33, and a head is inserted in the manuscript insertion opening 36. The detection piece 42 is pressed at the head of the transparency manuscript 16, rocks the manuscript pilot switch 37 arranged in the inner part of the manuscript insertion opening 36, and it interrupts between the floodlighting section of photosensor 43, and light sensing portions. Thereby, photosensor 43 turns on and the ON signal is inputted into a control section 25. A control section 25 drives the motor 39 for feeding and the motor 55 for conveyance, and the line scanner 40 based on this ON signal.

[0029] the transparency manuscript 16 -- a feed roller pair -- it is put between 38, and the conveyance rollers 58-60 and the follower rollers 58a-60a, and is conveyed towards a stage 17. By the middle, the image of one line of the transparency manuscript 16 is scanned at a time with the line scanner 40, and the picture signal by which photo electric translation was carried out is inputted into a control section 25. Moreover, a control section 25 specifies the size of the transparency manuscript 16 from the die length of the cross direction of the transparency manuscript 16, and controls actuation of the motor 39 for feeding, and the motor 55 for conveyance.

[0030] The transparency manuscript 16 between which the side edge section was put with the rollers 58-60 for conveyance and the follower rollers 58a-60a stops by part for the center section of a stage 17, as shown in drawing 4. Thereby, since the image of the transparency manuscript 16 is projected on a screen, vertical migration of a pillar 4 performs focus accommodation.

[0031] In a control section 25, a picture signal is changed into a video signal and it inputs into the connected computer 50. By computer 50, based on the inputted video signal, the image of the transparency manuscript 16 can be displayed on monitor 50a, and can be recorded on floppy disk 50c by floppy drive 50b. Thus, the image recorded on floppy disk 50c can be behind reused to the presentation in a small number of people etc., and can also be further outputted and used by a printer etc.

[0032] When projection of the transparency manuscript 16 is completed, the delivery switch 29 of automatic manuscript feed gear 6 top face is operated. A control section 25 discharges the transparency manuscript 16 from the manuscript exhaust port 52, as only fixed time amount drives the motor 55 for conveyance and is shown in drawing 5 in response to the ON signal of the delivery switch 29. In projecting another transparency manuscript 16 continuously, it inserts the head of another transparency manuscript 16 in the manuscript insertion opening 36 again.

[0033] Next, another operation gestalt of this invention is explained. Drawing 6 shows the important

section cross section of a reflective mold projector where the projection optical system was incorporated in the body. This reflective mold projector 60 consists of a projector body 62 with which the stage 61 which consists of a glass plate 71 was formed in the top face, and an automatic manuscript feed gear 63 attached to the top face of this projector body 62. The projection lens 64 which projects the image of the transparency manuscript 16 on a screen is formed in the center of a front face of the projector body 62. [0034] The light source 68 which consists of a lamp 66 and a reflector 67, and a condensing lens 69 and the reflective mirror 70 are included in the interior of the projector body 62. It is reflected by the reflective mirror 70 towards the upper stage 61, it is reflected in deflection NERUMIRA 72 arranged above this stage 61, and incidence of the light emitted from the light source 68 is again carried out to the reflective mirror 70. The reflective mirror 70 reflects light towards the projection lens 64, and the projection lens 64 condenses this and it projects it on a screen.

[0035] Under the reflective mirror 70, the control section 74 which controls each part of the reflective mold projector 60 is formed. This control section 74 is equipped with the conversion circuit which changes the read picture signal into a video signal etc., the output section which outputs this video signal to an external instrument while the control circuit which consists of a CPU etc. is incorporated and it controls a transfer control, image read, etc. of the transparency manuscript 16 within the automatic manuscript feed gear 63.

[0036] As the reflective mold projector 60 is shown in drawing 7 R> 7 seen from the upper part, the feed base 76 where one transparency manuscript 16 is set at a time is established in the top face of the automatic manuscript feed gear 63. In case the transparency manuscript 16 is inserted a longitudinal direction or from a short hand, the index 77 which doubles the edge of the transparency manuscript 16 is describing on the top face of this feed base 76. In addition, this index 77 is doubled with the width of face of the transparency manuscript 16 of A4 size, and the index for the transparency manuscripts of other sizes can be added, or it may enable it to move an index according to the size of a manuscript.

[0037] Moreover, the electric power switch 79 which turns on and off the power source of the reflective mold projector 60, the delivery switch 80 which discharges the transparency manuscript [ finishing / projection ] 16 from a stage 61, and the control panel 82 with which the fine conveyance switch 81 grade which performs positioning of the transparency manuscript 16 on a stage 61 was incorporated are formed in the top face of the automatic manuscript feed gear 6. These switches 79-81 are connected to the control section 74.

[0038] The manuscript insertion opening 84 with which the transparency manuscript 16 is inserted is formed in the upper part of the feed base 76. The manuscript pilot switch 85 which detects that the transparency manuscript 16 was inserted, the feed roller 86 which turns and feeds a stage 61 with the transparency manuscript 16 on the feed base 76, the line scanner 87 which scans the image of one line of the transparency manuscript 16 under conveyance at a time, and reads it, and the manuscript prevention piece 88 which stops the relief of the transparency manuscript 16 are incorporated in the inner part of this manuscript insertion opening 84.

[0039] the two forks arranged by the manuscript pilot switch 85 approaching the wall top face of the automatic manuscript feed gear 63 with the detection piece 90 hung free [ a splash ] along the conveyance direction of the transparency manuscript 16, and this detection piece 90 -- it consists of floodlighting mold photosensor 91 of a configuration. If the transparency manuscript 16 lets the feed base 76 top slide and is inserted into the automatic manuscript feed gear 63 from the manuscript insertion opening 84 as shown in drawing 8, the head of the transparency manuscript 16 will press the detection piece 90. The detection piece 90 rocks and interrupts between the floodlighting section of photosensor 91, and light sensing portions by part for the point. Thereby, photosensor 90 is turned on and it is detected that the transparency manuscript 16 was inserted.

[0040] The ON signal of the manuscript pilot switch 85 is inputted into a control section 74. A control section 74 drives the feed roller 86 according to the ON signal of the manuscript pilot switch 85. A pressure welding is carried out to the top face of the transparency manuscript 16, it rotates on it, and the feed roller 86 is conveyed with constant speed towards a stage 61.

[0041] The line scanner 87 is arranged ahead of the line sensor in which it is the same as that of what



was used for the overhead projector 2 shown in above-mentioned drawing 1, and the read of the color picture using CCD arranged by intersecting perpendicularly to the conveyance direction of the transparency manuscript 16 is possible, and this line sensor, and consists of selfoc lenses which carry out image formation of the image of the transparency manuscript 16 to a line sensor. Therefore photo electric translation of the line scanner is carried out, and the image of the transparency manuscript 16 is inputted into a control section 74. A control section 74 changes into a video signal the picture signal inputted from the line scanner 87, for example, outputs it to external instruments, such as a computer 50, and a monitor, a video player, a video printer.

[0042] The manuscript prevention piece 88 was hung from the wall top face of the automatic manuscript feed gear 63 free [ a splash ], and prevents the relief of the transparency manuscript 16 scanned with the line scanner 87 in contact with the top face of the transparency manuscript 16.

[0043] The manuscript guide 93 of a radii configuration is arranged, and the transparency manuscript 16 is caudad turned to the point of the manuscript prevention piece 88, and is guided to it. the 1st which discharges the transparency manuscript 16 which projection ended from the manuscript exhaust port 94 while putting the transparency manuscript 16 near the outlet of this manuscript guide 93, and between the side of a stage 17 and conveying on a stage 61 -- conveyance roller pair 95 and the 2nd -- conveyance roller pair 96 and the 3rd -- conveyance roller pair 97 and the 4th -- conveyance roller pair 98 is arranged.

[0044] it is shown in drawing 9 -- as -- the 1- the 4th -- conveyance roller pair 95-98 consist of driving rollers 95a, 96a, 97a, and 98a arranged above the projector body 52, respectively, and follower rollers 95b, 96b, 97b, and 98b attached free [ a revolution ] so that it might project slightly from the top face of the projector body 62. The gear 100 rotated to one is formed in driving roller 95a on the same axle, and a gear 101 gears on this gear 100. The gear 102 prepared in the gear 101 at one gears on a gear 103, and the pulley 106 which drives this gear 103 on the motor 105 for conveyance through a belt 104 is formed in one.

[0045] Moreover, pulley 95c is prepared in driving roller 95a at one, and the belt 108 hung on this pulley 95c is hung on the pulleys 96c, 97c, and 98c formed in driving rollers 96a, 97a, and 98a at one, respectively. In addition, the above-mentioned feed roller 86 is driven on the motor 115 for feeding through a gear 111, 112, and a pulley 113 and a belt 114.

[0046] The stepping motor is used and both the motor 115 for feeding and the motor 105 for conveyance are controlled by the control section 74. The scan of the transparency manuscript 16 with the line scanner 87 detects the die length of the cross direction of the transparency manuscript 16, the die length of this cross direction to the transparency manuscript 16 specifies whether it is loaded with the longitudinal direction or the direction of a short hand either, and drives the motor 115 for feeding, and the motor 105 for conveyance corresponding to that conveyance lay length, and a control section 74 is made to suspend them so that the transparency manuscript 16 may be laid in the center of a stage 61.

[0047] By four maintenance levers 117 in which ends were attached respectively free [ a splash ], and the plunger 119 of a solenoid 118, deflection NERUMIRA 72 is hung above the stage 61, and is made and attached in the tooth back and the underside of the feed base 76.

[0048] When the power source is not supplied to a solenoid 118, as shown in drawing 10, a plunger 119 is pulled out by the weight of deflection NERUMIRA 72 from a solenoid 118, and deflection NERUMIRA 72 puts the transparency manuscript 16 on a stage 61, when it piles up on a stage 61 and the transparency manuscript 16 is laid on the stage 61 at this time. Moreover, if a solenoid 118 energizes, as shown in drawing 6 and drawing 8, a plunger 119 will be drawn in a solenoid 118 and will pull deflection NERUMIRA 72. Thereby, deflection NERUMIRA 72 will be in the condition of having been hung by the maintenance lever 117, and will form sufficient clearance for the transparency manuscript 16 to pass between stages 61.

[0049] The transparency manuscript 16 which projection ended is discharged from the manuscript exhaust port 94 by operating the delivery switch 80 in the control panel 82 of automatic manuscript feed gear 63 top face. If the delivery switch 80 is turned on, this ON signal is inputted into a control section 74, and a control section 74 will drive the motor 105 for conveyance in the delivery direction of hard



flow while making a solenoid 118 energize. Thereby, as shown in drawing 11, the transparency manuscript 16 is discharged by conveyance roller pair 95-98 from the manuscript exhaust port 94. [0050] Moreover, the remote control light sensing portion 122 connected to the control section 74 is formed in the side face of a projector 62. It can carry out from the location which left actuation by the switch on a control panel 82, and the same actuation with the remote control unit shown with a sign 123.

[0051] Next, an operation of the above-mentioned operation gestalt is explained. The reflective mold projector 6 is arranged in the location which stands face to face against a screen. In recording the image of the transparency manuscript 16 with projection of the transparency manuscript 16, as shown in drawing 6, it connects a computer 50 to a control section 74.

[0052] The light which the lamp 66 of the light source 68 lit up when it was operated to the electric power switch 79 in control panel 82 of automatic manuscript feed gear 63 top face ON-side, as shown in drawing 7, and was irradiated from this lamp 66 is reflected in deflection NERUMIRA 72 by the reflective mirror 70 toward a stage 61, incidence is again carried out to the reflective mirror 70, and, finally incidence is carried out to the projection lens 64. The projection lens 64 condenses this light and projects it on a screen. At this time, a certain amount of focus accommodation is performed according to the dotage condition of the profile of the light projected on the screen.

[0053] Where the field which the image is describing is turned up, as the transparency manuscript 16 is laid on the feed base 76 and it is shown in drawing 8, it lets the transparency manuscript 16 slide on the feed base 76, and a head is inserted in the manuscript insertion opening 84. The detection piece 90 is pressed at the head of the transparency manuscript 16, rocks the manuscript pilot switch 85 arranged in the inner part of the manuscript insertion opening 84, and it interrupts between the floodlighting section of photosensor 91, and light sensing portions. Thereby, photosensor 91 turns on and the ON signal is inputted into a control section 74.

[0054] A control section 74 drives the motor 115 for feeding and the motor 105 for conveyance which are shown in drawing 9, and the line scanner 87 based on this ON signal, and makes a solenoid 118 energize further. If a solenoid 118 energizes, deflection NERUMIRA 72 will be in the condition of having been hung above the stage 61, and will form the clearance which can pass the transparency manuscript 16 between stages 61.

[0055] The transparency manuscript 16 is conveyed by the feed roller 86 and conveyance roller pair 95-98 towards a stage 61 top. By the middle, the image of one line of the transparency manuscript 16 is scanned at a time with the line scanner 87, and the picture signal by which photo electric translation was carried out is inputted into a control section 74. Moreover, a control section 74 specifies the loading direction of the transparency manuscript 16 from the die length of the cross direction of the transparency manuscript 16, and controls actuation of the motor 115 for feeding, and the motor 105 for conveyance.

[0056] the object for conveyance -- the transparency manuscript 16 with which the side edge section was put by roller pair 95-98 stops in the center of a stage 61, as shown in drawing 10. Moreover, energization of a solenoid 118 is stopped in this case, and deflection NERUMIRA 72 is piled up on the transparency manuscript 16. Since the image of the transparency manuscript 16 is projected on a screen, proper focus accommodation is performed.

[0057] In a control section 74, a picture signal is changed into a video signal and it inputs into the connected computer 50. By computer 50, based on the inputted video signal, the image of the transparency manuscript 16 is displayed on a monitor, and is recorded on a floppy disk by the floppy drive. Thus, the image recorded on the floppy disk can be behind reused to the presentation in a small number of people etc., and can also be further outputted and used by a printer etc.

[0058] When projection of the transparency manuscript 16 is completed, the delivery switch 80 of automatic manuscript feed gear 63 top face is operated. In response to the ON signal of the delivery switch 80, a control section 74 energizes a solenoid 118 and raises deflection NERUMIRA 72 from a stage 61. Moreover, as only fixed time amount drives the motor 105 for conveyance to hard flow and is shown in drawing 11, the transparency manuscript 16 is discharged from the manuscript exhaust port 94. In projecting another transparency manuscript 16 continuously, it inserts the head of another

transparency manuscript 16 in the manuscript insertion opening 84 again.

[0059] In addition, with each above-mentioned operation gestalt, although the computer was connected to the control section, when the external instrument of others, such as a monitor, a video player, and a video printer, may be connected and it gives a presentation to a small number of people at the small hall, a direct monitor can be connected to a control section and a presentation can also be performed on a monitor. Furthermore, although the line scanner in which the read of a color picture is possible was used, the line scanner for monochrome images may be used.

[0060] Moreover, although the transparency mold overhead projector and the reflective mold projector were used as an example, it can use also for a reflective mold overhead projector.

[0061]

[Effect of the Invention] Since the line scanner which reads an image and is outputted to an external instrument was formed in the automatic manuscript feed gear according to the projector of this invention when conveying a transparency manuscript on a stage as explained above, it can be adopted as low cost, without enlarging a projector, and broad utilization of the manuscript used by the projector is attained.

[0062] Moreover, since the line scanner was used for the transfer control of a transparency manuscript, the sensor used in order for an automatic manuscript feed gear to detect the size of a transparency manuscript conventionally can be excluded, and the cost of a projector can be cut down.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the important section sectional view showing the configuration of the transparency mold overhead projector which carried out this invention.

[Drawing 2] It is the top view of a transparency mold overhead projector.

[Drawing 3] It is the important section sectional view showing the condition of the automatic manuscript feed gear at the time of a manuscript set.

[Drawing 4] It is the important section sectional view showing the condition of the automatic manuscript feed gear at the time of projection.

[Drawing 5] It is the important section sectional view showing the condition of the automatic manuscript feed gear at the time of delivery.

[Drawing 6] It is the important section sectional view showing the configuration of the reflective mold projector which carried out this invention.

[Drawing 7] It is the top view of a reflective mold projector.

[Drawing 8] It is the important section sectional view showing the condition of the automatic manuscript feed gear of the reflective mold projector at the time of a manuscript set.

[Drawing 9] It is the explanatory view showing the configuration of the manuscript conveyance device of an automatic manuscript feed gear.

[Drawing 10] It is the important section sectional view showing the condition of the automatic manuscript feed gear of the reflective mold projector at the time of projection.

[Drawing 11] It is the important section sectional view showing the condition of the automatic manuscript feed gear of the reflective mold projector at the time of delivery.

[Description of Notations]

2 Overhead Projector

3 Housing

6 63 Automatic manuscript feed gear

16 Transparency Manuscript

17 61 Stage

25 74 Control section

37 85 Manuscript pilot switch

40 87 Line scanner

60 Reflective Mold Projector

62 Projector Body

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[Translation done.]

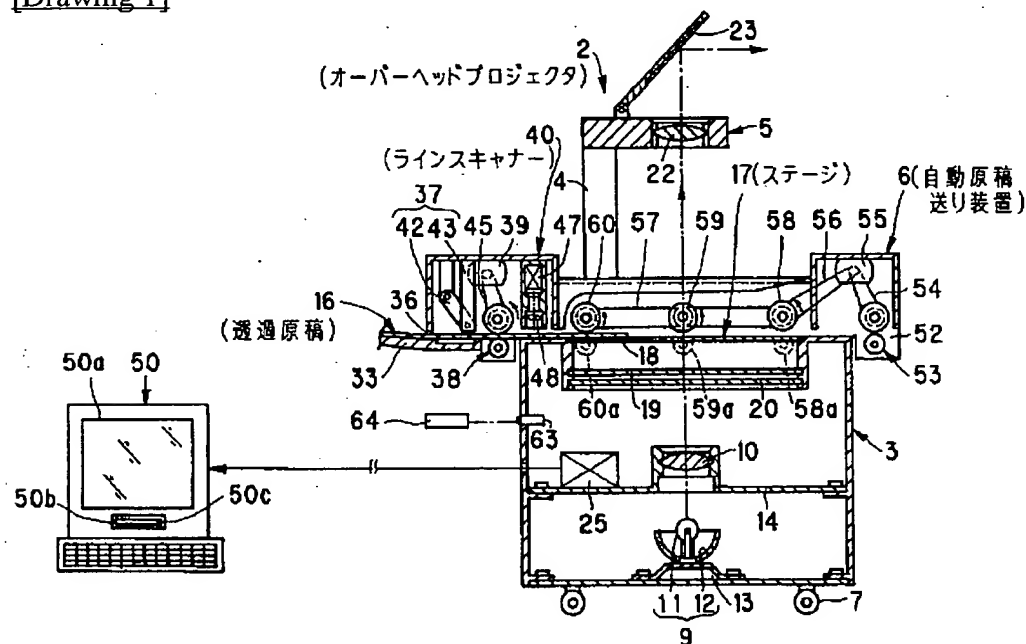
## \* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

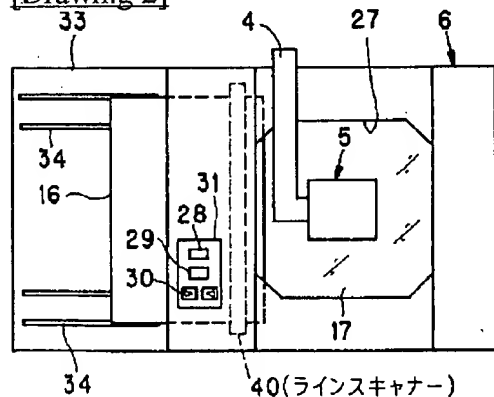
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

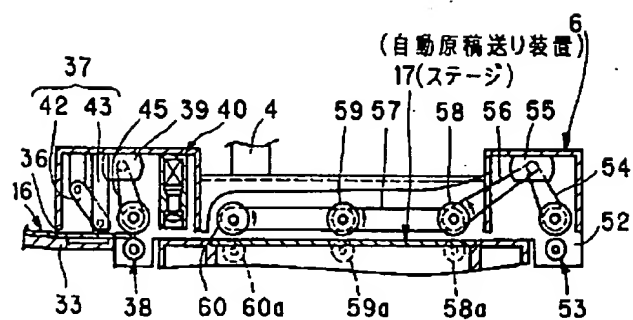
[Drawing 1]



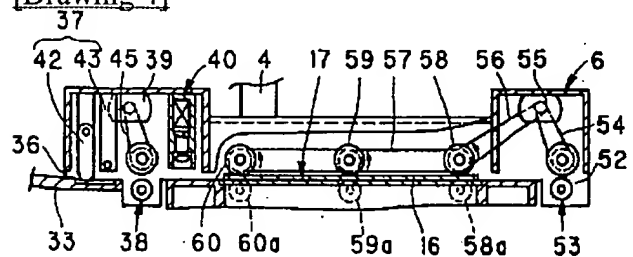
[Drawing 2]



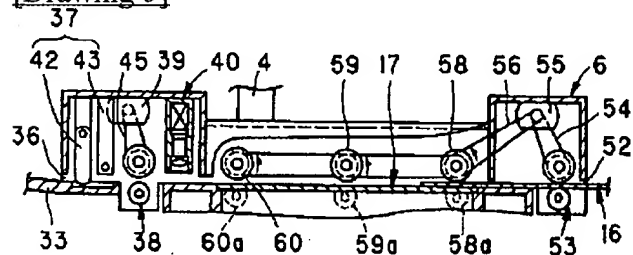
[Drawing 3]



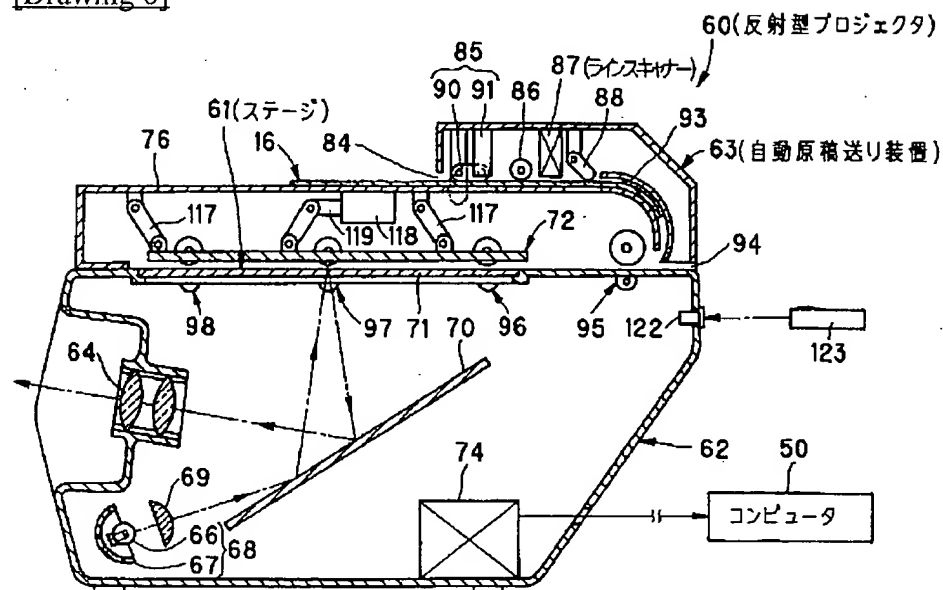
[Drawing 4]



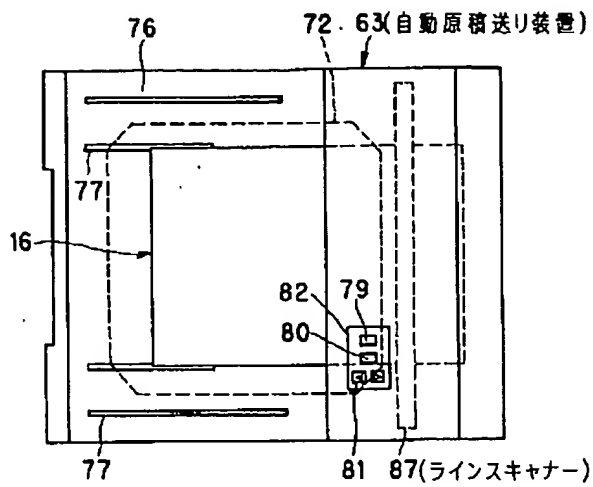
[Drawing 5]



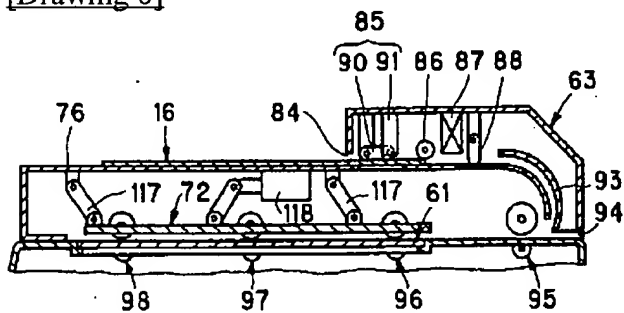
[Drawing 6]



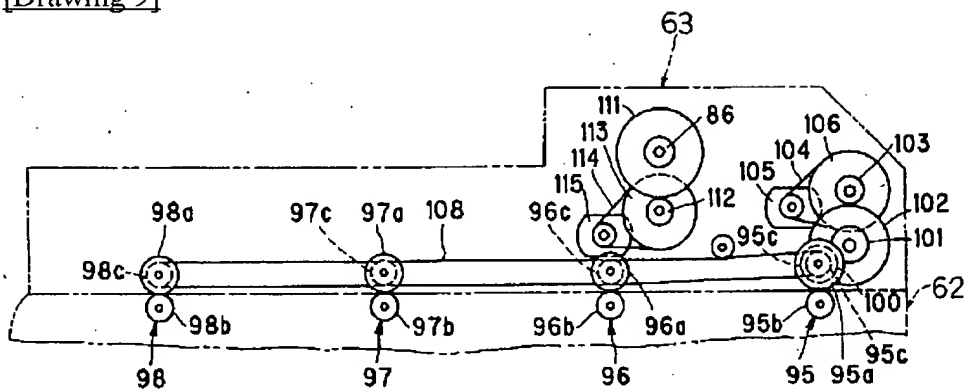
[Drawing 7]



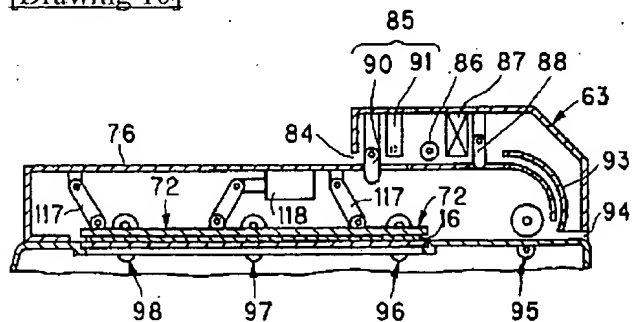
[Drawing 8]



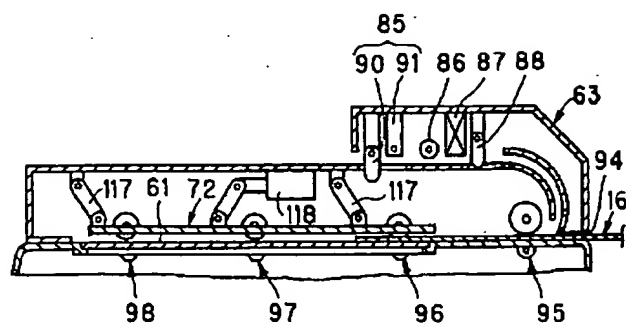
[Drawing 9]



[Drawing 10]



[Drawing 11]



[Translation done.]